DOE This Month

U.S. DEPARTMENT OF ENERGY

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Spencer Abraham sworn in as 10th Secretary of Energy

Sandia, partners to develop bioscience supercomputer

DOE This Month

U.S. Department of Energy

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Inside

On our cover

G. Timothy Saunders, Executive Clerk at the White House, administers the oath of office to Spencer Abraham as the nation's 10th Secretary of Energy on Jan. 20, 2001. Secretary Abraham's wife Jane and their children share in the momentous occasion. The United States Senate confirmed Secretary Abraham the same day following the inauguration of President George W. Bush.

Spencer Abraham confirmed, sworn in as tenth Secretary of Energy

Spencer Abraham was sworn in as the 10th Secretary of Energy on Jan. 20, 2001, following his confirmation by the United States Senate the same day. President George W. Bush nominated Abraham to the position on Jan. 2.

Secretary Abraham represented Michigan in the U.S. Senate from 1995 to 2001. During his Senate tenure, he served on the Budget; Commerce; Science and Transportation; Judiciary; and Small Business Committees and chaired two important subcommittees—Manufacturing and Competitiveness, and Immigration.

His colleagues and most observers widely viewed Secretary Abraham as the Senator with the best understanding of "high-tech" policy and issues and the importance of this sector to America's economy and global success. Among his accomplishments, Secretary Abraham authored the Electronic Signature in Global and National Commerce Act, establishing a framework for on-line contracts and signatures; the Government Paperwork Elimination Act; and the Anti-Cybersquatting Consumer Protection Act, which protects Internet domain names for businesses and persons against copyright and trademark infringements.

Before his election to the Senate in 1994, Secretary Abraham was co-chairman of the National Republican Congressional Committee from 1991 to 1993. He served as Deputy Chief of Staff to Vice President Dan Quayle from 1990 to 1991. From 1983 to 1990, Secretary Abraham held the elected position of Chairman of the Michigan Republican Party.

Secretary Abraham and his wife Jane live in Michigan and Virginia with their three children. He holds a law degree from Harvard University and is a native of East Lansing, Michigan.

At his Senate confirmation hearing on Jan. 18, Secretary Abraham outlined his vision as Secretary of Energy and addressed four critical missions of the Department of Energy—national security, energy policy, science and technology, and environmental management. "The missions of the Department of Energy are diverse, complex, and vital to our country," he said.

"Paramount among the four missions of the Department is supporting our national security," Secretary Abraham said. "...nothing I do will be higher on my priority list than the management of our nuclear stockpile." He added that the Bush Administration will continue the Department's successful efforts in addressing nuclear nonproliferation and that security at the Department's national laboratories also is a very high priority.

Secretary Abraham noted that recent developments in California's electricity markets and the Northeast's heating oil supply confirm the importance of the Department's responsibility to develop a national energy policy. "President Bush and I are deeply committed to developing an energy policy that includes increasing domestic production of energy in an environmentally responsible manner, increasing our use of renewable energy, decreasing our reliance on imported oil, and developing new technologies that conserve fossil fuels and reduce energy-related pollution," he said.

In the area of science and technology, Secretary Abraham expressed his desire to continue to move the nation forward in programs that can improve economic competitiveness. "I believe the Department's national laboratories can serve the country in many capacities and look forward to exploring the full potential for partnerships with industry and academia," he stated.

Secretary Abraham noted the Department "has the unenviable distinction of implementing the world's largest cleanup program... and an exceptionally difficult challenge in cleaning up and managing the wastes generated during more than 50 years of nuclear weapons production. These problems were not created overnight and certainly we are not going to dispense with them quickly or easily.

"But we can do a better job of accelerating cleanup and closure of those sites that are surplus to DOE's needs. I pledge to work with Congress and the States to find ways to move the DOE cleanup program forward."

In conclusion, Secretary Abraham emphasized his support for the missions and programs of the Department of Energy and his commitment to carry out these missions to the best of his abilities and in the best interests of American citizens. ❖

Heating oil reserve formally established

On March 6, Secretary of Energy Spencer Abraham forwarded notification to Congress that formally establishes the Northeast Home Heating Oil Reserve. The formal notification and submission of the reserve plan establishes the two-million-barrel heating oil reserve as a separate legal entity from the Strategic Petroleum Reserve. In November 2000, Congress amended the Energy Policy and Conservation Act of 2000 allowing the Department of Energy to move forward with plans to establish the Northeast reserve.

"The reserve was established as an insurance policy against supply, inventory, and delivery problems in the wake of last winter's extreme weather that pounded the northeast United States," said Secretary Abraham. "Like the crude oil reserve, our intention is to use the reserve sparingly to respond to severe energy supply interruptions."

The Secretary added that he would urge commercial oil terminals and suppliers in the Northeast to continue conducting their business as if the reserve was non-existent. "If extreme events conspire to threaten life, health, or the economic well being, the reserve will help provide additional oil to fill the gap until private suppliers can resume their business activities," he said. The President of the United States will have authority over the use of the heating oil reserve.

President George W. Bush supports the creation of the reserve, Secretary Abraham noted in his letter to Congress, saying that the reserve is "an important element of the President's 'Blueprint for New Beginning' budget proposal." President Bush has proposed $8 million in funding for the Northeast Home Heating Oil Reserve.

An equivalent of one million barrels of heating oil currently is stored in New York Harbor and another one million barrels in New Haven, Conn. Three companies—Amerada Hess Corp., Morgan Stanley Capital Group, and Equiva Trading Company—have agreed to store the oil at their terminals, rotate the oil, and manage delivery in the event of an approved use of the reserve.

The following states fall under the jurisdiction of the Northeast Home Heating Oil Reserve: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. ❖

Experiment results may challenge Standard Model of particle physics

Scientists at the Department of Energy's Brookhaven National Laboratory (BNL), in collaboration with researchers from 11 institutions in the United States, Russia, Japan, and Germany, have announced an experimental result that directly challenges the Standard Model of particle physics. The Standard Model, an overall theory of particle physics that explains and gives order to subatomic particles, has withstood rigorous experimental challenge for 30 years. The theory encompasses three of the four forces known to exist in the universe—the strong, electromagnetic, and weak forces—but not the fourth force, gravity.

The BNL finding—a precision measurement of something called the anomalous magnetic moment of the muon, a subatomic particle—deviates from the value predicted by the Standard Model. This indicates that other physical theories that go beyond the assumptions of the Standard Model may now be open to experimental exploration. The experiment results have been submitted to *Physical Review Letters*.

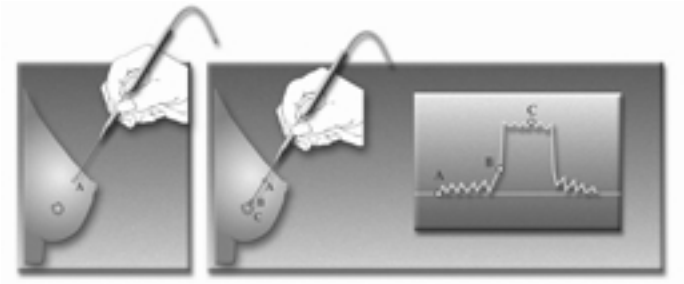
The g-2 (pronounced gee-minus-two) experiment has been generating data since 1997. Until the results were announced, the BNL scientists did not know whether their work would confirm the prediction of the Standard Model. "We are now 99 percent sure that the present Standard Model calculations cannot describe our data," says Brookhaven physicist Gerry Bunce, project manager for the experiment.

The g-2 values for electrons and muons are among the most precisely known quantities in physics and have been in good agreement with the Standard Model. The g-2 value measures the effects of the strong, weak, and electromagnetic forces on the "spin" of a particle. Using Standard Model principles, theorists have calculated how the spin of a muon would be affected as it moves through a magnetic field. Previous experimental measurements of this g-2 value agreed with the theoretical calculations.

Using a very intense source of muons delivered by the Alternating Gradient Synchrotron, the research team at Brookhaven, however, has measured g-2 to a much higher level of precision. The new result is numerically greater than the Standard Model prediction. "There appears to be a significant difference between our experimental value and the theoretical value from the Standard Model," says Yale physicist Vernon Hughes.

All the physicists agree that further study of the data is needed. The team expects to complete the analysis within the next year. Additional information is available at **http://www.bnl.gov/bnlweb/pubaf/pr/bnlpr020801.htm**. ❖

Livermore Lab helps develop 'smart probe' for breast cancer detection



"Smart Probe" makes continuous measurements as it moves from the surface of the breast to the center of a tumor. The graph illustrates what the analyzed signal might look like for the case of a malignant lesion.

The Department of Energy's Lawrence Livermore National Laboratory (LLNL) has partnered with BioLuminate, Inc., San Jose, Calif., to develop "Smart Probe," a minimally invasive diagnostic tool for earlier, more accurate breast cancer detection. The tool removes no tissue and is expected to achieve accuracy levels comparable to surgical biopsies in detecting cancerous cells.

The BioLuminate Smart Probe, smaller than the needle used in routine blood tests, is inserted into breast tissue after an initial screening indicates an area of concern. The probe looks for multiple known indicators of breast cancer, instantaneously providing physicians with information they can use to determine whether more invasive and costly tests are necessary. The results of the procedure are immediately available to patients.

Sensors on the tip of the probe measure optical, electrical, and chemical properties that are known to differ between healthy and cancerous tissues. The Smart Probe can detect multiple (5 to 7) known indicators of breast cancer. Tissue measurements are made in real time in both normal and suspect tissue.

Smart Probe's sensors begin gathering information the moment the probe is inserted into tissue. Computer software compares the real-time measurements to a set of known, archived parameters that indicate the presence or absence of cancer. The results are displayed instantly on a computer screen.

LLNL has signed a research and development agreement with BioLuminate to use the Laboratory's proprietary optical imaging and probing technology to develop Smart Probe for all cancer detection applications. "The key technology and experience that Lawrence Livermore Lab has to offer will allow the Smart Probe to be much smaller than first conceived, and acquire data more accurately," said Dr. Luiz Da Silva, LLNL Associate Medical Technology Program Leader and primary investigator for the tool.

BioLuminate and Livermore researchers are designing and fabricating the first Smart Probe prototype. The first human studies are expected to begin this spring at sites to be selected in Northern California. The device is expected to be commercially available by 2003. Eventually, the Smart Probe also is expected to be used on prostate, lung, colon, cervical, and brain cancer patients to detect malignancies and deliver and monitor treatment. ❖

Wind project slated for Nevada Test Site

Plans are underway to build the second largest wind power facility in the United States on a portion of the Department of Energy's (DOE) Nevada Test Site (NTS), 65 miles northwest of Las Vegas. A recent agreement signed in January establishes a partnership between the MNS Wind Company and the NTS Development Corporation (NTSDC) and paves the way for transforming the test site into a renewable energy facility that will help stabilize utility supplies for both consumers and the government.

MNS Wind Company is a partnership in negotiation between M&N Wind Power of La Jolla, Calif., and Siemens Energy & Automation Inc., of Atlanta, Ga. The NTSDC is a nonprofit corporation that works with DOE to promote the growth of science and technology in Nevada. The Department and NTSDC are making 664 acres available for the wind farm. The Nevada Test Site ceased nuclear weapons testing in 1992.

"There are many locations across the country where use of wind and solar power makes sense. The Nevada Test Site is just one of them," said General John Gordon, Under Secretary for Nuclear Security and Administrator, National Nuclear Security Administration (NNSA). "As the owner-operator of the test site, we are glad to be able to cooperate in this project that is fully consistent with long-term NNSA missions."

The first phase of the three-phase project calls for at least 120 wind turbines to be operational by the end of 2001 and supply 85 megawatts of electricity, enough power to supply 85,000 people from some of the nation's fastest growing communities. The other phases will be developed 18 months after completion of the first phase. When completed, the wind farm will have 325 wind turbines producing 260 megawatts of electricity, enough power to supply 260,000 people.

The wind farm will contribute to the Department's Nevada Operations Office to support the national security mission of the NTS. Prorated over the three phases of the project, the wind farm operators will provide DOE-Nevada with free energy equivalent to 10 percent of the NTS electrical consumption last year. ❖

Sandia, Celera, Compaq to develop biotechnology supercomputer

A Cooperative Research and Development Agreement between the Department of Energy's (DOE) Sandia National Laboratories and Celera Genomics, Rockville, Md., begins development of the next generation software and computer hardware solutions for the demands of computational biology and a full range of life sciences applications. Compaq Computer Corporation will provide the project technology.

Sandia, Celera, and Compaq will work together to increase computing capability with the goal of achieving 100 trillion operations per second (100 TeraOPS). By sharing some computing technology developed by Sandia, Celera and Compaq may ultimately reach the "petacruncher" (1,000 TeraOPS) level.

This level of cooperation is necessary to meet the dramatic increases in performance required for emerging genomics and proteomics applications at affordable prices, and brings together the capabilities of three leaders in the fields of bioinformatics, high performance computing, and massively parallel systems. Proteomics is the study of the function, structure, and interactions of proteins in cells, including humans and other organisms.

"Delivering affordable and scalable computer architectures is the foundation of modern supercomputing and has been the focus of Sandia research for more than a decade," said Bill Camp, Sandia director of computation, computers and mathematics. "Our knowledge will be useful because understanding the complexity of the human genome requires manipulating ever vaster amounts of information, using more advanced computing technologies than was required even for the assembly of the human genome itself."

"As Compaq and the Department of Energy move toward creation of the next generation of supercomputers for defense purposes, we look forward to helping both groups develop the new machines, software, and algorithms to advance life sciences," said Celera President J. Craig Venter.

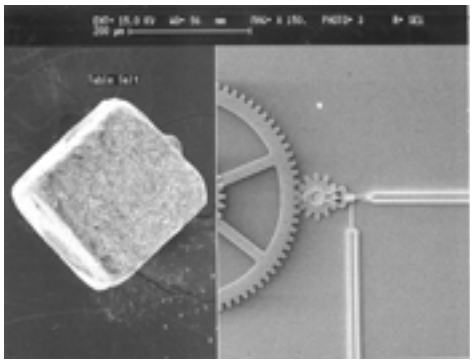
Compaq and Sandia will collaborate on the development of system hardware and software. Celera and Sandia will concentrate on creating advanced algorithms for biology research and on new visualization technologies for analyzing the massive quantities of experimental data from high-throughput instruments. All three groups will contribute to integrating the system hardware and software and on optimizing performance. The goal is to create a prototype in the 2004 time frame. ❖

KC Plant adds microsystems to its expertise

The same silicon wafer technology used to fabricate millions of semiconductors on tiny silicon chips is now being used to fabricate micro-miniature mechanical and optical devices, including motors, transmissions, mirrors, and fluidics devices. Potential applications for these micro-electro-mechanical (MEMS) systems range from medical treatment and antiterrorism to high-speed mirror arrays for Internet optical switching.

The nation's nuclear defense system now is looking to microsystems, and the Department of Energy's Kansas City Plant (KCP) and Sandia National Laboratories have teamed to establish a production capability for microsystems for nuclear weapons and other applications. "We now have established an excellent prototype capability to manufacture and inspect pieceparts, and plan to have a production capability in fiscal year 2002," said John Bosnak, Honeywell engineering manager at KCP. "Our capabilities for polysilicon microsystems and for integrated packaging of micromachines, integrated circuits, and optical devices are in the early stages of development. We are targeting initial weapon applications of microsystems as early as fiscal year 2006."

The Kansas City Plant has a role in producing polysilicon mechanisms that are part of a MEMS device being developed at the Department's laboratories. In a process similar to the growing of crystals, the polysilicon material for the MEMS mechanism is also grown. To begin the process, glass is deposited on a wafer of silicon. Polysilicon material is then vapor-deposited onto the glass. After the mechanism shape is masked onto the polysilicon, the unnecessary material, including the glass, is etched away with hydrofluoric acid, allowing the polysilicon mechanism to move freely on the silicon wafer. When the masked wafers are received from the laboratories, the Kansas City Plant's job is to remove the glass, separate the devices, and package the MEMS with other devices into a complete microsystem assembly.



A scanning electron microscope magnification of 150X shows a size comparison of a polysilicon gear and a grain of table salt.

The largest gears in these mechanisms are one-half the diameter of a human hair. With the increasing use of miniature components, weapon components such as stronglinks can be made that have virtually no size, freeing up space. ❖

Livermore lends forensics expertise to high-profile investigation

The re-arrest on Jan. 16, 2001, of Efren Saldivar, the self-proclaimed "Angel of Death" and alleged killer of the terminally ill at a Glendale, Calif., hospital, could not have happened without the assistance of the Forensic Science Center at the Department of Energy's Lawrence Livermore National Laboratory (LLNL), and its director Brian Andresen. Special analyses by the center gave Glendale investigators the evidence they could use to arrest Saldivar and charge him with the murders of six patients.

In his original 1998 confession, Saldivar detailed his use of two paralyzing drugs, Pavulon and succinylcholine chloride, injected into the IV's of patients. After withdrawing his confession, Saldivar was released; but the investigation continued.

In early 1999, Andresen was contacted by Michael Peat, former President of the American Academy of Forensic Sciences, to help with the investigation. "Peat recommended the Lab's Forensic Science Center to perform the toxicology analysis on exhumed tissues," Andresen said. "He knew that the Lab had the right combination of highly sensitive and sophisticated equipment and also the knowledge-base to handle these types of unusual samples."

Because succinylcholine chloride breaks down very quickly into chemicals normally found in human tissue, Andresen concentrated his testing of samples from 20 exhumed patients on Pavulon, a potent, synthetic muscle relaxant often administered to patients on artificial respiration. After six positive hits for Pavulon, Andresen made his preliminary presentation to the Los Angeles District Attorney's office in December 1999, after which all of his results were double-checked by their outside sources. On Jan. 5, 2001, after reviewing a final presentation of all the toxicology findings and outside reviews, the District Attorney's office decided to proceed with the case.

LLNL's Armando Alcaraz (left) and Brian Andresen inspect the electrospray assembly that is the heart of the advanced triple quadrupole mass spectrometry technology used in the toxicology analysis.

The primary mission of the LLNL Forensic Science Center is to support U.S. nonproliferation and counterterrorism programs, but its capabilities can be used to assist law enforcement where there are special needs. The center has provided forensic support to several cases, including the UNABOMBER investigation. ❖

Initiative targets advanced coal technologies

The Department of Energy recently issued a solicitation offering $95 million in Federal matching funds for projects that can boost the electricity produced by coal-burning power plants or that help the plants meet more stringent environmental standards. The "Power Plant Improvement Initiative" is targeted at advanced clean coal technologies.

"This initiative is another step in an effort to bring increased efficiency and new technologies to coal-burning plants," said Secretary of Energy Spencer Abraham. "It also represents an area that is certain to be part of a comprehensive national energy policy to help us meet the energy demands and needs of the country well into the future."

The initiative is a fast-track effort to test technologies that can be installed on current plants or designed into new plants to increase power generating efficiencies. Currently, coal-burning power plants, which account for more than half of the nation's electricity, convert only a third of the energy value of the fuel into electricity. The Department also is seeking technologies that can lower emissions of air pollutants and allow coal-burning power plants—especially older units—to continue operating while meeting more stringent air quality standards.

Other technologies covered under the solicitation are those that would generate multiple products from coal in addition to electricity. These technologies have a requirement that at least half of the fuel used by the power plant must be converted to electricity.

To be selected, technologies must offer improvements well beyond the capabilities of today's commercial equipment and be mature enough to be deployed into the market within the next few years. Winning proposers must commit to provide at least 50 percent of the cost to design, build and test the technology and, if the technology is commercially successful, agree to repay the Federal Government's funding share.

The Department's National Energy Technology Laboratory is coordinating the initiative. Winning projects are to be announced in late August or early September and the projects should be under way this fall. Additional information is available on the Internet at **http://www.netl.doe.gov/ppii/**. ❖

Analyses of draft human genome published

Detailed analyses of the human genome sequence working draft have been published by the publicly sponsored U.S. Human Genome Project (HGP) in the Feb. 15, 2001, issue of *Nature* magazine. Likewise, the Feb. 16, 2001, issue of *Science* focuses on the draft sequence reported by the company, Celera Genomics.

Ari Patrinos, head of the Department of Energy's (DOE) Human Genome Program and Director, Office of Biological and Environmental Research, Office of Science, led a series of meetings in 2000 between leaders of the public and private projects that resulted in agreement to announce completion of the draft human genome in June 2000 and to publish their analyses concurrently.

The analyses of the working draft provide scientists worldwide with a virtual road map to about 95 percent of all human genes. The HGP draft sequence provides a valuable framework for generating the high-quality reference genome sequence—the ultimate goal the project expects to achieve by 2003 or sooner. All publicly generated HGP data are available on the Internet.

Although 16 institutions participate in the Human Genome Project, most sequencing takes place at five locations, including the DOE Joint Genome Institute (JGI). The JGI integrates the sequencing activities of the human genome centers at the Department's Lawrence Berkeley, Lawrence Livermore, and Los Alamos National Laboratories. Partner institutions include DOE's Oak Ridge and Pacific Northwest National Laboratories and the Stanford Genome Center.

Additional information on the U.S. Human Genome Project and DOE's continuing work in this area is available at **http://www.ornl.gov/hgmis**. ❖

Cost savings speed cleanup at Hanford

Workers at the Department of Energy's (DOE) Hanford Site in Washington have started cleanup of two new waste sites along the Columbia River nearly 10 years ahead of the original schedule due to money freed up through cost efficiencies in other environmental restoration projects. The two sites are part of the accelerated cleanup of the eastern 600 Area portion of the Columbia River corridor.

Both sites are believed to contain mostly construction debris, but one site also was thought to contain improperly disposed lead-based paint and hazardous solvents, which require remediation. So far, workers have unearthed the expected paint and lots of concrete, wood, wire and piping, most likely from an earlier Hanford building demolition.

"The site is actually cleaner than we anticipated," said Rich Carlson, Bechtel Hanford, Inc. (BHI) task leader for the project. "Original estimates placed the amount of debris and contaminated soil at about 10,000 tons. Through efficient sorting and some luck, it looks like we'll only have to dispose of about 3,500 tons of material."

Carlson added that much of the soil is clean and can be returned to the pit—avoiding the expense of importing clean fill for site remediation. The debris will be transported to Hanford's Environmental Restoration Disposal Facility (ERDF).

The second site is located near F Reactor, one of the first reactors constructed at Hanford in the 1940s. Workers have surveyed the site for any hazardous, radioactive, or explosive materials. Interviews with former site workers and reviews of historical documents indicate the site may contain construction debris and potentially contaminated manufacturing equipment. The site is thought to contain 18,500 tons of material requiring disposal. ❖

ARM researchers win international award

Participants in the Department of Energy's (DOE) Atmospheric Radiation Measurement (ARM) Program were recently honored by the World Meteorological Organization with the 15th Professor Dr. Vilho Vaisala Award for their paper "Ground-Based Remote Sensor Observations during PROBE in the Tropical Western Pacific." Among the 11 researchers recognized were Charles Long and Thomas Ackerman of the Department's Pacific Northwest National Laboratory.

The Atmospheric Radiation Measurement Program is the DOE's largest global change research program and provides fundamental information needed to understand and predict climate change. The PROBE campaign was sponsored by the Department and provided the basis for the ARM program's long-term measurement sites in the tropics.

The paper describes the PROBE experiment and the deployment of state-of-the-art instruments in Kavieng, Papua New Guinea from Jan. 6 to Feb. 28, 1993. Ackerman, ARM Chief Scientist, notes that the PROBE experiment led to establishing the ARM long-term climate observation stations at the program's Tropical Western Pacific site on Manus Island, Papua New Guinea, and the island of Nauru. "PROBE represented the opportunity to deploy sophisticated research instruments in an environmentally challenging location," he said. Most of the techniques pioneered in PROBE are now used at the ARM sites.

The Atmospheric Radiation Measurement Program is coordinated by the Environmental Sciences Division, Office of Science. Additional information on the program is available at **http://www.arm.gov**. ❖

Cleaner chip-making method uses CO_2

It is estimated that on the average day of operations at a computer chip-making plant, 4,000,000 gallons of wastewater are produced and thousands of gallons of corrosive hazardous materials, like hydrochloric and sulfuric acid, are used. But now, a new technology developed by scientists at the Department of Energy's Los Alamos National Laboratory (LANL) could eliminate the use of hazardous corrosives and the production of wastewater in the manufacturing process.

Called SCORR, the technology focuses on photoresist removal, one of the steps in the photolithography process where high intensity light along with aggressive acids and corrosives are used to create a chip's tiny integrated circuits by altering a silicon wafer. Using supercritical carbon dioxide—carbon dioxide at high temperature and pressure—in place of the hazardous materials, the technology inexpensively replaces the solvents and the tremendous quantities of ultra-pure water used to wash them away.

"Carbon dioxide at pressures above 1,050 pounds per square inch and temperatures above 31°C becomes supercritical," said Craig Taylor, who leads the SCORR team in LANL's Applied Chemistry Technologies Group. "In its supercritical phase, the gas becomes liquid, but behaves a little like both—giving it the ability to act as a solvent. But supercritical carbon dioxide alone is somewhat ineffective, so it is combined with minor amounts of a more effective co-solvent, and we've seen that this mixture is quite effective at photoresist removal."

A tiny high-pressure sprayer pulses the mixture onto the silicon wafer to help dislodge the bits of photoresist that have already been softened by a soaking in the mixture. This combined process of soaking and spraying, along with a supercritical carbon dioxide wash, has produced results that equal the chip fabrication standards currently accepted in industry.

The photoresist removal technology produces virtually zero hazardous waste. It is designed as a closed-loop system that reuses the carbon dioxide in the process. The additive co-solvents are easy to separate from the mixture, so they, too, are collected and reused. ❖

BWXT ready to work at Pantex Plant

BWXT Pantex assumed management and operations of the Department of Energy's (DOE) Pantex Plant on Feb. 1, 2001, following a transition period that began last November. The Department awarded the contract to the company in July 2000. BWXT Pantex and DOE agreed to a five-year contract, with an option for a five-year extension.

BWXT Pantex is an independent company formed solely to manage the Pantex Plant. It brings together the strengths of three companies: BWX Technologies, Honeywell, and Bechtel National. The Pantex Plant is located about 17 miles northeast of Amarillo, Texas.

"We are honored that the Energy Department selected us to manage and operate the Pantex Plant," said BWXT Pantex President and General Manager Dennis Ruddy. "We've enjoyed great cooperation from the employees at Pantex and DOE during our transition period. From day one, the community welcomed us with open arms. It's our goal at Pantex to safely and securely maintain the nation's nuclear weapons stockpile. It's an important job, and we welcome the chance to roll up our sleeves and get to work."

"We've enjoyed getting to know BWXT during the transition," said DOE Amarillo Area Office Manager Dan Glenn. "We're looking forward to working with the new company."

On Feb. 1, the BWXT management team personally welcomed all employees as they entered the plant. Community leaders and media were invited to an early-morning ceremony unveiling a new sign at the plant entrance.

The next day, the new team served a pancake breakfast to Pantex employees. The new managers also visited employees at their work stations during swing and graveyard shifts and delivered box lunches to those not scheduled to work during the breakfast. "We wanted to do something special for the employees to let them know that we're looking forward to working with them and to welcome them to the BWXT team," Ruddy said. ❖

Dennis Ruddy, President and General Manager, BWXT Pantex (left), and Dan Glenn, Manager, DOE Amarillo Area Office, unveil the new sign near the east entrance of Pantex Plant.

Wireless technology spins off to serve private sector

A wireless communication technology developed at the Department of Energy's Pacific Northwest National Laboratory (PNNL) that's capable of tracking items ranging from honeybees to soldiers is the foundation of a new company. Wave ID will license the proprietary radio-frequency (RF) identification technology and will be financed partially by Battelle, which operates PNNL for the Department. Wave ID will pay Battelle royalties, of which 51 percent will be returned to PNNL for use at the laboratory.

The company will develop and sell wireless communication systems that will include RF tags—wireless communication devices that range in size from a grain of rice to a credit card and can be designed to identify, locate, and monitor items. Wave ID's products will be useful for warehouse inventory and supply chain management, security control, and other applications where an item's location, history, and physical or environmental condition is important.

PNNL engineers will continue enhancing RF wireless capabilities for government use. ❖

Teaching an old technology new tricks

Scientists at the Department of Energy's (DOE) Argonne National Laboratory (ANL) have adapted a 30-year-old technology and successfully tested a new solvent-extraction process that could help decontaminate high-level waste now stored in underground tanks at the Department's Savannah River Site. The caustic-side solvent extraction (CSSX) process is one of several under consideration for use at Savannah River.

CSSX will separate the radioactive isotope cesium-137 from the extremely saline liquid present in the underground waste tanks. The key technology in the CSSX process is Argonne's multistage centrifugal contactor, a materials separation device, being examined (at left) by ANL scientist Ralph Leonard.

Working with scientists at DOE's Oak Ridge National Laboratory and Savannah River Technology Center, Leonard and his team modified the centrifugal contactor. A pilot-plant-scale contactor running the CSSX process produced a cesium decontamination factor of almost 100,000, meaning all but one part in 100,000 was extracted from a solution. ❖

New Brunswick Lab scientists monitor Russian facilities

Two scientists from the Department of Energy's New Brunswick Laboratory (NBL) in Argonne, Ill., recently participated in the Highly Enriched Uranium (HEU) Transparency Program as first-time monitors. Kimberly Johnson-Miller, Manager, Nuclear Safeguards and Nonproliferation Support Program, and John W. Neuhoff, Director, Nuclear Safeguards and Nonproliferation Division, were part of two different monitoring teams that visited two Russian facilities. Upon their return, they had much to discuss and compare about their experiences. The two scientists join four other NBL monitors who take part in the monitoring of four Russian facilities.

A network laboratory for the International Atomic Energy Agency, NBL is the U.S. Government's Certifying Authority for nuclear reference materials and provides an independent Federal technical staff and laboratory resource for nuclear material measurements, safeguards, and nonproliferation functions. The HEU Transparency Program is administered by DOE's Office of International Nuclear Safety and Cooperation (NN-30), National Nuclear Security Administration. ❖

Cooperative project promotes alternative fuels

The first compressed natural gas (CNG) fueling station has opened in Idaho Falls with the help of the Department of Energy's Idaho National Engineering and Environmental Laboratory (INEEL). The station, a collaborative effort among INEEL and Idaho Falls businesses Wright Oil and Tire and L/CNG Energy Systems, will be operated by the two businesses under a Cooperative Research and Development Agreement.

The facility is a portable fueling station from the INEEL site, and the pump (at right) doesn't look like the standard gasoline pump at the local filling station. Over the next few months, a permanent facility will be built at the Idaho Falls location, and the portable fueling station will be moved to another location in the region in an effort to further expand the regional alternative fuel corridor. As part of the agreement, INEEL will use the station to fuel its fleet of CNG-powered vehicles and to conduct research and development activities. ❖

Bettis Laboratory receives state environmental award

The Department of Energy's (DOE) Bettis Atomic Power Laboratory, West Mifflin, Pa., recently received the Pennsylvania Governor's Award for Environmental Excellence in the pollution prevention category. Bettis was recognized for reducing water consumption by 89 million gallons per year, reducing solid waste by 491 tons compared to previous years, and recycling 750 tons of material in 1999—resulting in annual savings of almost $1,000,000 in operating costs.

Carl Rogers, General Manager, Bechtel Bettis, Inc., attributed the laboratory's success to workers' efforts at "mainstreaming" environmental compliance and pollution prevention into all daily operations. Bettis is operated by Bechtel Bettis, Inc., under the direction of Admiral F. L. Bowman, Deputy Administrator for Naval Reactors, National Nuclear Security Administration.

In the photo (l-r) are James Seif, Secretary, Pennsylvania Department of Environmental Protection; Henry Cardinali, Manager, DOE Pittsburgh Naval Reactors Office; Carl Rogers; and Robert Barkanic, Pennsylvania Deputy Secretary of Pollution Prevention and Compliance Assistance. ❖

Learning science is fun when it wiggles

Question: Can you name something kids love to eat that is yellow and wiggles—and is also part of a science experiment for students? Answer: An optic lens made of Jell-O®. That's just one of the activities and experiments in the Traveling Science and Mathematics Demonstrations Program sponsored by the Department of Energy's Savannah River Site (SRS) in South Carolina.

This successful program began in 1993 and is founded on a partnership between SRS and the University of South Carolina-Aiken's Ruth Patrick Science Education Center. Over 200 Savannah River employees volunteer their time and knowledge.

The volunteers typically visit a classroom with one or more from over 300 different types of standardized kits that demonstrate a scientific or mathematical property or principle. The kits cover a range of subjects, including biology, physics, chemistry, algebra and geometry. Over 145 demonstrations were given to students throughout the region during the 1999-2000 school year, reaching over 9,500 students. ❖

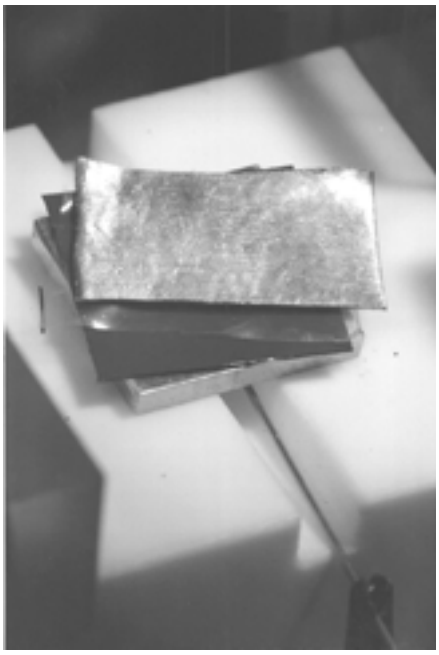
Department honors most notable scientific, technological accomplishments

The Department of Energy (DOE) recently honored several of its laboratories and sites with "Energy 100 Awards" for their notable scientific and technological achievements during the Department's 23-year history. The awards recognize 100 outstanding discoveries and innovations that have contributed to society by helping consumers save money and improve their quality of life. A panel of citizen judges evaluated nominations from Department sites to select the 100 outstanding achievements. The accomplishments range from the implementation of the U.S. Strategic Petroleum Reserve in 1977, to energy-efficient windows from Lawrence Berkeley National Laboratory in 1981, to the Lab-on-a-Chip from Oak Ridge National Laboratory in 1993.

Two additional awards—"Energy@23" and "Bright Light"—further recognize the Department's contributions to American consumers. The citizen judges selected the Energy@23 winners from the Energy 100 list of scientific and technological innovations developed by DOE between 1977 and 2000. The 23 highest ranked innovations demonstrated benefits to the American public, a contribution to U.S. competitiveness in the global marketplace, and the potential for significant future growth. Five Bright Light winners were selected by the citizen judges from the most recent consumer-oriented innovations between the years 1999 and 2000.

Taking top honors in both the Energy@23 and Bright Light awards was the Lithium Battery Solid Electrolyte developed by chemist Mason K. Harrup and colleagues from the Idaho National Engineering and Environmental Laboratory (INEEL). The technology, under development at INEEL since 1999, promises safer, more versatile and longer-lasting rechargeable batteries. Lithium batteries made with experimental solid electrolyte last about 50 percent longer than competing electrolytes and are safer and more environmentally friendly to produce.

The other Bright Light winners are Green Solvents, Dr. James Frank, Argonne National Laboratory; UNI-SOLAR Modules, Photovoltaic Technology for Roofs, Drs. Ken Zweibel and Subhendu Guha, National Renewable Energy Laboratory; Biomechanical Pancreas to Manage Diabetes, Dr. Stephen Lane, Lawrence Livermore National Laboratory; and Advanced Turbine System Program, Abbie W. Layne, National Energy Technology Laboratory.



Shown here is the lithium battery solid polymer electrolyte with its thin, clear membrane sandwiched between metal plates

A complete list of all the award winners is available at **http://www.ma.doe.gov/energy100**. ❖

Contracts extended at Department sites

The Department of Energy, the National Nuclear Security Administration, and the University of California (UC) have agreed on new management and operations contracts for the Department's Lawrence Livermore and Los Alamos National Laboratories. Requirements of the contracts are expanded and strengthened, and the contracts are extended for a three-year period.

The contract restructuring will require UC to implement urgently needed management improvements and bring about the changes needed to avoid the safety, security, and project management lapses that have been encountered in the past. The additional contract extension to Sept. 30, 2005, will stabilize the essential scientific and technical workforce and allow sufficient time to demonstrate successful implementation of the management improvements. The new contracts are valued at more than $2 billion.

A contract extension has been negotiated by the Department with Washington Group International's Westinghouse Savannah River Company and its integrated team of Bechtel Savannah River, Inc.; BWXT Savannah River Company; and British Nuclear Fuels, Limited, Savannah River Corporation to manage and operate the Savannah River Site. The extension option was part of the original contract when it was competed in 1996.

The extension runs through Sept. 30, 2006, and will have a total value of approximately $8.4 billion. The Department and Westinghouse Savannah River Company negotiated for four months on a new fee structure that is performance-based and focuses on completing work related to the key missions of the Savannah River Site. ❖

Defense Programs strives to change project management culture

The Office of the Deputy Administrator for Defense Programs (DP) in the Department of Energy's (DOE) National Nuclear Security Administration recently initiated a DP Project Management Improvement Campaign to change the office's project management culture to one of accountability and improved construction program performance. The campaign addresses concerns of reports by the DOE Inspector General and the General Accounting Office, Defense Nuclear Facilities Safety Board issues, National Research Council findings and recommendations, and Congressionally initiated project management requirements.

DOE participants in the first workshop for Defense Programs Headquarters and field project managers.

One part of the campaign is a series of training workshops for Headquarters and field project "owners" or managers. The first workshop, held last November in Washington, D.C., focused on the theme "Creating a Competent Project Management Organization." The workshop included presentations from Virgil Carter, Executive Director, and Rebecca Winston, Vice Chairman, Board of Directors, Project Management Institute; Jeanne Wilson, Staff Assistant, House Energy, Water Development and Appropriations Subcommittee; and Drs. Harold Kerzner and Davidson Frame, world-renowned experts and authors on project management.

The workshop provided the opportunity for a ceremonial signing of the "General Partnering Agreement Between the Project Management Institute (PMI) and the Department of Energy." The agreement promotes:

- cooperation and information exchange for project management professional development, training, and education;
- expansion of needed new project management knowledge, resources and services;
- cooperation in planning and hosting meetings and preparing new publications;
- participation in or establishment of new joint projects in the Project Management Professional Certification (PMP) program and Special Interest Groups applicable to DOE operations; and
- opportunities for directed or PMI sponsored research or potential extensions to PMI guides reflecting government/DOE project management processes.

The second workshop is scheduled for the summer of 2001 in Las Vegas, Nev. Additional information related to project management issues, the PMI partnering agreement, and the DP Project Management Improvement Campaign can be found by logging onto the Office of Project Management Support, DP-6, web site at **https://www.dp.doe.gov/dp-6**; see bottom of screen to get password. ❖

NEW Publications

Office of Inspector General (IG) reports: ***Inspection of Department of Energy Activities Involving Biological Select Agents*** (DOE/IG-0492); ***Audit Report, Internet Privacy*** (DOE/IG-0493); ***Audit Report, Richland Operations Office Fleet Management*** (WR-B-01-01). Available from the U.S. Department of Energy, IG Reports Request Line, 202-586-2744; or electronically at **http://www.ig.doe.gov/**.

❖

Working With Indian Tribal Nations, A Guide for DOE Employees (DOE/EM-0571), a publication from the Office of Intergovernmental and Public Accountability in the Department of Energy's (DOE) Office of Environmental Management. The publication provides DOE staff and contractors an overview of the history of the relationship between Indian tribes and the Federal Government, as well as the laws and Executive Orders that define that relationship. The guide also discusses important cultural differences that could lead to communication problems if not understood and provides examples of potential cultural misunderstandings. Available on the Internet at **http://www.em.doe.gov/public/tribal/history.html** or from the Center for Environmental Management Information at 800-736-3282 or 202-863-5084.

❖

A Report Card on the Department of Energy's Nonproliferation Programs with Russia, the final report of the Secretary of Energy Advisory Board's Task Force on Nonproliferation Programs with Russia. The task force was co-chaired by former White House Counsel Lloyd Cutler and former Senate Majority Leader Howard Baker. Available on the Internet at **http://www.hr.doe.gov/seab/rusrpt.pdf**. ❖

Groundwater contaminants bubble away

Chemical engineer Bob Cherry of the Department of Energy's Idaho National Engineering and Environmental Laboratory and civil engineer Bob Borden at North Carolina State University have developed a cheaper, more efficient system for cleaning up groundwater contamination from leaking underground storage tanks. The contaminants they attacked are volatile compounds known as BTXE—benzene, toluene, xylene, and ethylbenzene.

A standard remediation system involves injecting air into the groundwater. The air strips contaminants out of the water while enhancing the natural remediation process. As air bubbles up the well casing, it carries the volatile compounds and disperses them into the atmosphere, where they pose far less of a health risk.

The typical sparging system for injecting oxygen is a large-diameter deep well in the ground with air pumped into the groundwater. Such systems are expensive and time-consuming to install and are difficult to clean as they often fill with bacteria or rust.

Cherry and Borden demonstrated a sparging system using numerous small wells instead of one giant well to produce a more effective oxygen flow. Each well operates like an aquarium bubbler to circulate stripped and oxygenated water from the well into the surrounding aquifer. The system works best where soils are porous, such as sandy soils. "The big advantage is that it is small-scale, easy to install, and uses standard well supplies," Cherry said.

INEEL chemical engineer Bob Cherry (right) and civil engineer Bob Borden of North Carolina State University stand at their well test site in North Carolina.

The engineers completed an extensive field-scale test in North Carolina where contaminated water from a truck parking area was affecting a resident's downstream drinking water well. The test lasted about seven months and included testing various system designs. "While the new system worked well, the test didn't run long enough to reduce the amount of BTXE quite to acceptable levels for drinking water," Cherry said. The sparger wells did treat the BTXE-contaminated water, but took longer to remediate BTXE attached to sand and organic matter in the aquifer.

Because the system does enhance natural remediation processes, "this method complements existing sparging-based remediation technologies," Cherry said. The project was funded by the Department's National Petroleum Technology Office. ❖

COMING Events

May

14-16 2001 National DOE/Contractor EEO and Diversity Training and Seminar, Denver, Colo. Sponsored by the Department of Energy's (DOE) Office of Economic Impact and Diversity and hosted by the Department's Western Area Power Administration, DOE-Rocky Flats, DOE-Golden, DOE-Denver Regional Office, Kaiser-Hill, and the Department's National Renewable Energy Laboratory. The seminar will provide broad discussion and exchange of ideas on the status and future of diversity and equal employment opportunity within DOE. For information, call 303-966-6522, or visit **http://www.rfets.gov/myweb**.

June

3-6 Energy 2001, 4th Annual National Energy Efficiency Conference and Exposition, Kansas City, Mo. Cosponsored by the Department of Energy, the Department of Defense, and the General Services Administration. The conference is designed to give government and private-sector energy management professionals the latest resources, tools, regulations, and techniques to help them solve their organization's energy problems. Program and registration information is available at **http://www.energy2001.ee.doe.gov** or by calling 800-395-8574.

18-22 2001 Department of Energy (DOE) Pollution Prevention (P2) Conference, Albuquerque, N.M. Sponsored by DOE, the Department's Los Alamos and Sandia National Laboratories, and the Waste-management Education and Research Consortium. The conference is structured to expedite progress toward a pollution-free DOE; topics include ISM/EMS integration, technology development, energy efficiency, and strategies. Additional information is available at **http://p2.werc.net**. Questions can be e-mailed to p2conference@lanl.gov. ❖

Research DIGEST

Probing the microscopic life found in the submerged recesses of an abandoned Wisconsin lead and zinc mine, scientists from the Department of Energy's **Argonne National Laboratory** and the University of Wisconsin-Madison have found compelling evidence that microorganisms play a key role in the formation of mineral deposits. The finding not only sheds light on biology's role in the formation of some metal ores, but could help launch new remediation efforts for contaminated sites. Writing in the Dec. 1, 2000 journal *Science*, Matthias Labrenz, lead author, and the research team describe the discovery and characterization of natural biofilms that seem to concentrate zinc sulfide. The biofilms are heavily populated with bacteria, some of which help convert sulfate or sulfuric acid, a pervasive contaminant associated with mining of metal ores, and zinc from groundwater into zinc sulfide.

New research on Ritalin, a drug prescribed to millions of American children each year with Attention Deficit Hyperactivity Disorder (ADHD) shows for the first time how the drug acts in the human brain and why it is so effective. The findings are reported in the Jan. 15, 2001, issue of the *Journal of Neuroscience* by researchers from the Department of Energy's (DOE) **Brookhaven National Laboratory**. Although Ritalin has been used for more than 40 years as a successful treatment for ADHD, minimal information has been gathered to date on exactly how the drug works in the brain, outside of limited animal studies. This latest study, on humans, indicates that Ritalin significantly increases levels of dopamine in the brain, thereby stimulating attention and motivational circuits that enhance one's ability to focus and complete tasks. A follow-up study of ADHD sufferers is planned.

Researchers in the Superconductivity Technology Center at the Department of Energy's **Los Alamos National Laboratory** have developed a new process for producing high-performance superconducting tape that operates at the temperature of liquid nitrogen. The latest achievement was attained by replacing cubic zirconia with magnesium oxide as the template material for the superconducting film. Superconducting tapes can efficiently carry vast amounts of electrical current with no resistive losses. A single, one-centimeter-wide, thin foil of the Los Alamos superconducting tape exhibits a current density—the amount of electrical current that can be passed through a cross section of the material—of more than one million amps per square centimeter. This means a single piece of superconducting tape can carry 200 times the electrical current of an equivalent copper wire. ❖

Truck program issues technology roadmap

The 21st Century Truck Program, a major new multiagency and industry partnership, has released a "technology roadmap" for developing commercially viable technologies to increase energy efficiency, reduce pollution, and improve safety in the nation's trucking industry. The roadmap establishes technical targets and fuel efficiency goals for 2010, along with safety-relevant performance targets.

The partnership is designed to cut fuel use and emissions by buses and trucks, while enhancing their safety, affordability and performance. Based on fuel usage, a number of truck platforms were selected for particular study. Transit buses and military vehicles were included, given their importance to the nation's transportation system and national defense.

Participating Federal agencies include the Departments of Energy, Defense, and Transportation and the Environmental Protection Agency. The roadmap is available on the Internet at **http://www.osti.gov/hvt/21stcenturytruck.pdf**. ❖

Fernald reaches 7,000,000 safe work hours

Employees at the Department of Energy's (DOE) Fernald Environmental Management Project (FEMP), near Cincinnati, Ohio, have reached 7,000,000 safe work hours without a lost-time injury or accident. This milestone surpasses the 5,000,000 hours met on June 16, 2000, and represents the longest consecutive safe work hour streak since the site began its environmental restoration mission.

"Our contractors, management team, and, more importantly, our employees are committed to working safely," said Steve McCracken, Director, of DOE-FEMP. "This accomplishment clearly demonstrates the successful safety culture that exists at Fernald.

In a related accomplishment, in December 2000, the Greater Cincinnati Building and Construction Trades Council and their representative companies reached eight years without a lost-time accident at Fernald. "This is an impressive accomplishment considering the nature of the work that is performed at Fernald and the extra precautions that are necessary when working with low-level contaminated materials," said Dave Kozlowski, Associate Director for Safety and Assessment for DOE-FEMP. ❖

Energy-sipping house earns technology award

Rising energy costs will have little impact on the Idaho Springs, Colo., residence of the Otto Van Geet family. During 1999, the total cost to heat and power the home was $100. Even with today's increasing energy prices, energy costs at the home are not expected to top $150.

Van Geet, who works at the Department of Energy's National Renewable Energy Laboratory (NREL) and coworker Paul Torcellini used computer simulations to design the house for the alpine climate. The house uses passive and active solar technologies to provide more than 90 percent of the home's energy needs.

These innovative energy-saving features were recognized with a first-place Technology Award by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) at its 2001 Winter Meeting. The award recognizes outstanding achievements by members who have successfully applied innovative building design in the areas of occupant comfort, indoor air quality, and energy conservation.

Among the design goals was to minimize the total heating and cooling loads and the hot water and appliance energy demands. The home is cooled through natural ventilation and heated by the sun, using passive solar design, active solar hot water, and radiant floor and convection baseboard heating. Fluorescent light fixtures and a low-energy refrigerator were installed. Propane is used as a seamless backup when solar is not available and also for cooking and clothes drying. ❖

Idaho Lab to study earth's subsurface

Understanding the complex interactions and changes that occur when water and contaminants move through the earth's subsurface are crucial to Department of Energy (DOE) laboratories working towards safe, efficient, and cost-effective environmental remediation. As DOE's Environmental Management lead lab, the Idaho National Engineering and Environmental Laboratory (INEEL) has taken steps to do the research in this area.

First, INEEL has named geophysicist Phillip Michael Wright as director of its Subsurface Science Initiative. Its goal is to develop new environmental remediation technologies and to strengthen the science basis for making cleanup decisions.

Second, the laboratory is beginning conceptual design for a new geoscience research user facility—the Subsurface Geosciences Laboratory. The laboratory will focus on "meso" or intermediate-scale research projects that help scientists bridge the gap between laboratory experiments and field observations. ❖

Department contractors earn top ratings

A rating of "Outstanding" has been awarded to Battelle by the Department of Energy's (DOE) Richland Operations Office for the operation of the Department's Pacific Northwest National Laboratory (PNNL) during fiscal year 2000. This is Battelle's third consecutive outstanding rating.

"Since 1965, PNNL has used experience, innovation, and forward thinking to create one of the premier multipurpose national laboratories in the nation," said Keith A. Klein, Manager, Richland Operations. "Whether it's leading edge molecular and cellular biology research, earth systems science, or computer science and information technology, PNNL continues to prove itself as a leader in basic science and quality research and development."

Battelle's performance evaluation by Headquarters and Richland Operations officials was based on several "critical outcomes" that were developed cooperatively by DOE and the laboratory. The outcomes include scientific and technological excellence, operational excellence, and leadership and management. Battelle has operated PNNL for the Department since 1965 and is under contract through Sept. 30, 2002.

The Department's Chicago Operations Office recently concluded a special "off-ramp" evaluation of Brookhaven Science Associates, LLC (BSA), the management and operating contractor of DOE's Brookhaven National Laboratory (BNL). The evaluation was conducted 33 months into BSA's potential five-year contract.

Chicago Operations Manager Marvin E. Gunn, Jr., who was Deputy Manager at the time of the review, led a team of DOE Headquarters and Chicago Operations officials that assessed BSA's success in meeting its specific commitments to excellence in three critical areas—science and technology; environment, safety and health; and community involvement/communication and trust. After a detailed on-site evaluation, the Department determined that BSA's performance was excellent and that the contractor would continue to manage BNL for the full five-year term.

BSA was selected to operate Brookhaven Lab after the Department terminated its contract in 1997 with Associated Universities, Inc., when tritium contamination from the laboratory's High Flux Beam Reactor spent fuel pool was discovered in groundwater, resulting in a loss of community trust. DOE required the off-ramp provision in the new contract to ensure that desired management, operational, and cultural changes were made without adversely affecting the performance of the laboratory's science and technology programs. ❖

People IN ENERGY

Nermin A. Uckan, a senior scientist and program leader of the Next-Step Fusion Studies at the Department of Energy's Oak Ridge National Laboratory, has been named editor of the American Nuclear Society's (ANS) technical journal *Fusion Technology*, effective June 2001. Also, Uckan, an ANS fellow, is a recipient of the Outstanding Lifetime Achievement Award from the society's Fusion Energy Division for her contributions to fusion science and engineering.

Syl Morgan-Smith, Colorado Governmental Relations Manager with the Department of Energy's National Renewable Energy Laboratory, is the recipient of the Trailblazer Award from the Colorado Martin Luther King Commission. The award was presented during the Commission's annual Martin Luther King, Jr. community reception. Morgan-Smith was selected for the award from a group of 50 nominees.

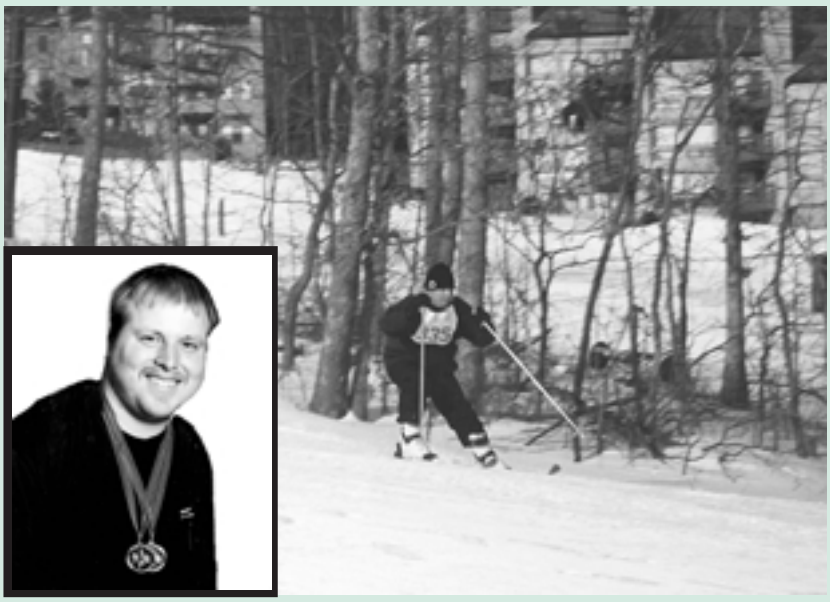
Department of Energy Inspector General **Greg Friedman**, Chair of the Audit Committee of the President's Council on Integrity and Efficiency (PCIE), has been selected as a member of the Council's Executive Committee. The mission of the PCIE includes addressing integrity, economy, and efficiency issues that transcend individual Government agencies, and increasing the professionalism and effectiveness of Inspector General personnel throughout the Government.

Michael Holland is the new Brookhaven Group Manager for the Department of Energy's (DOE) Chicago Operations Office. Holland will assure that Brookhaven Science Associates effectively manages and operates the Department's Brookhaven National Laboratory. Holland has over 25 years of experience in overseeing reactor operations and previously was manager of Brookhaven's High Flux Beam Reactor Transition Project.

Long-time Los Alamos researcher and manager **Paul Lisowski** has been named Director of the Los Alamos Neutron Science Center (LANSCE) at the Department of Energy's Los Alamos National Laboratory. Lisowski has served in a broad range of technical and management positions in his more than 23 years at Los Alamos, including project director for the highly successful National Accelerator Production of Tritium Project.

Harry Boston is the new Manager of the Department of Energy's Office of River Protection in Richland, Wash., a position he has held in an acting capacity since August 2000 (*DOE This Month*, August 2000). Previously, Boston was Deputy Manager for Site Transition at the Department's Richland Operations Office.

Nora Volkow, Associate Laboratory Director for Life Sciences at the Department of Energy's Brookhaven National Laboratory, has been elected a member of the Institute of Medicine of the National Academy of Sciences. ❖



Hats off to Benjamin (Ben) King! Ben, a contract employee in the Department of Energy (DOE) Headquarters' Forrestal Mail Center, recently competed in the 2001 Winter Special Olympics at Wintergreen Ski Resort, Charlottesville, Va., and earned both a gold and silver medal in downhill and slalom skiing, respectively. Ben has participated in the Special Olympics since age 11. Besides skiing, he has competed in bowling, basketball, and volleyball, earning 30 medals. According to his supervisor Carolyn Keyes, Ben works hard and is admired for his leadership and competitive spirit. When not working at DOE or training, Ben enjoys swimming, music, computers, and visiting amusement parks. ❖

Milestones

YEARS OF SERVICE

February 2001

Headquarters

Chief Financial Officer - Juanita B. McDuffie (35 years). **Congressional & Intergovernmental** - Joseph A. Vivari (30). **Counterintelligence** - Barry W. Krause (30). **Economic Impact & Diversity** - Tyrone K. Levi (30). **EIA** - Michael J. Griffey (35), Charles W. Riner (25). **Energy Efficiency** - Julia D. Oliver (30), Mattie B. Towns (30), Cheri R. Sayer (30), Marsha L. Quinn (25).

Envir., Safety & Health - Roy E. Gibbs (25), Frank B. Russo (25). **FERC** - Donna J. Glasgow (30), Ronald G. Lucas (30), Linda A. Palmateer (25), David G. Tishman (25). **Fossil Energy** - Barbara N. McKee (30), William E. Fernald (25), Robert J. Wright (25). **General Counsel** - Lot H. Cooke (25). **Inspector General** - Mary E. Anthony (30).

Management & Administration - Judith A. Hockenbery (40), Jan M. Chavez-Wilcynski (25). **NNSA** - Donald P. Doherty (40), Jeng G. Chang (25), James M. Turner (25). **Radioactive Waste** - Wayne N. Kozai (25), James Blaylock (30), Choon K. Quan (30). **Science** - Kathleen H. Centeno (30). **Security & Emergency Operations** - William C. Hawkins, Jr. (30), Barbara K. Gardner (25), Pamela E. Main (25).

Field

Albany Research Center - Delbert A. Baker (30). **Albuquerque** - David S. Ingle (30). **Albuquerque/NNSA** - Gene S. Chavez (30), Robert R. Gibson III (25), Alan J. Kelly (25), James C. Riley (25). **Bonneville Power** - Janet L. Burnett (30), Thomas A. Grover (30), James M. Kehoe (30), Jerome F. Lyski (30), Sharon K. Munce (30), Homer S. Thompson (30), Georgette E. Blake (25), Patricia A. Daly (25), Daniel S. Dewey (25), Carlene A. Jones (25), Michael A. Newsham (25).

Chicago - Rory S. Simpson (25), Justin T. Zamirowski (25). **Golden** - Dennis D. Maez (35). **Naval Petroleum Reserves CO, UT, WY** - Debora L. Miles (25). **NETL** - Sharon K. Marchant (30), Pamala K. Stasia (25), Gary J. Stiegel (25). **Nevada/NNSA** - William N. Muraoka (30), Beverly A. Colbert (25), Marguerite Knight (25). **Oakland** - Henry M. De Graca (30), Dominic P. Passanisi (30), Larry P. Hermann (25), Maria J. Tice (25).

Pittsburgh Naval Reactors/NNSA - Dorothy L. Whitt (35). **Richland** - Wu S. Chin (25). **Savannah River** - Mitchell A. Mascoe (25), James L. O'Connor (25). **Southeastern Power** - Fredrick L. Easom (30). **Western Area Power** - Earl T. Bonneau (30), Charles W. Cooper (30), Katherine L. Crane (30), Dell R. Wolfe (30), Janet A. Bruning (25), Charles R. Huckfeldt (25), Susane C. Silva (25).

March 2001

Headquarters

Chief Financial Officer - Stephen P. Baker (25). **EIA** - James M. Thompson (30), Michael D. Lehr (25), Shirley Veney (25). **Energy Efficiency** - Tina M. Oxendine (25). **Envir. Management** - Jerry M. Hyde (40), James J. Fiore (25). **Envir., Safety & Health** - Elizabeth R. Beavers (30), Earl C. Hughes (25), Atam P. Sikri (25).

FERC - John F. Joseph (40), John M. Hamilton, Jr. (30), Carol E. Connors (25), George A. Godding (25), Yolanda C. Hart-Harris (25), Mary M. Hertling (25), Kay I. Morice (25), Mark S. Shaffer (25). **General Counsel** - Don W. Crockett (30). **Hearings & Appeals** - Roger J. Klurfeld (25). **Inspector General** - E. Elaine Easter (30), Sharon E. Carter (25).

Intelligence - Ralph M. Hitchens (30). **International Affairs** - Michael J. Perper (35), James E. Hart (30). **Management & Administration** - Earl E. Dorsey (30), Auttie H. Hendricks (30), Michael L. Maust (30), Stephen L. Smith (30), David A. Wilson (30). **NNSA** - John A. Marchetti (40), Thomas S. Ryder (30), John F. Metzler (25), Edward L. Reynolds (25), James W. Slawski (25).

Policy - Peter Karpoff (25). **Radioactive Waste** - Dorothy N. Callier (30). **Science** - Charles W. Billups (35), James R. Carney (35), Benjamin L. Weakley, Jr. (35), Gloria S. Young (30), Nona F. Shepard (25). **Security & Emergency Operations** - Robert N. Hubbard (30), James P. Mackey III (30), Michael S. Orosz (30).

Field

Albany Research Center - Max C. Lewis (35). **Albuquerque/NNSA** - Eileen M. Gabaldon (30), Larry D. Kirkman (30), Richard F. Lucero (30), Joseph S. Ewanowski (25), Robert N. Mowery (25). **Chicago** - Kenneth Lewis (35), Raymond J. Lagomarsino (30), Kenneth Chiu (25), Sarah T. Stines (25). **Idaho** - Richard S. Burger (30), Dennis G. Pope (25).

Naval Pet. Reserves CO, UT, WY - David A. Miles (30). **NETL** - David J. Wildman (25). **Nevada/NNSA** - James D. Barrett III (25). **Oak Ridge** - Jennifer H. Cusick (25), Stanley D. Frey (25). **Oak Ridge/NNSA** - James R. Hutton (25). **Oakland/NNSA** - Steven M. Smith (30), Dorothy C. Martinez (25). **Ohio** - Lorinda M. Leduc (25).

Richland - David W. Roha (30), Robert W. Lober (25), Norman D. Moorer (25). **Rocky Flats** - Michael S. Karol (30). **Western Area Power** - Jimmy L. Hunt (40), J. Elaine Watson (35), Gary L. Bates (30), Roger P. Christensen (30), Nancy L. Goddard (25), James H. Hartzell (25), David L. Klatt (25), Charles S. Miller (25).

Bonneville Power - Richard R. Haldy (35), Linda L. McKinney (35), Edward A. Peterson (35), Noel W. Walter (35), Barry B. Wright (35), Nanshell M. Gill (30), Sheldon D. Hill (30), Kenneth C. Kirkman (30), James E. Newbigging (30), James L. Omta (30), Eldon G. Tollefson (30), James L. Wiford, Jr. (30), James W. Burns (25), Lois A. Coleman (25), Jon A. Hirsch (25), Terry K. Hoover (25), Elpidio A. Jeter (25), Gerald L. Keenan (25), A. Ann Scholl (25), Ronald H. Sevier (25), E. Allan Willis (25).

RETIREMENTS

December 2000

Headquarters

Chief Financial Officer - Victor N. Baronoff (26 years), Ruth A. Fulwood (34), Kathleen M. Mason (28). **Energy Efficiency** - Jacob Kaminsky (22), Herbert W. Owens (38), N. Michael Voorhies (35). **Envir., Safety & Health** - Charles R. Arnold (9). **Fossil Energy** - James C. Johnson (37), Earl M. Querin (24), Jerome R. Temchin (36). **General Counsel** - Gloria E. Millberry (37), William R. Moser (25).

Inspector General - Walter L. Allen (32), Sylvia J. Ellis (33), Paul J. McKeown (30), Joseph Terzini (40), Randy E. Tucker (27), Curtis H. Wehrmann (24). **International Affairs** - Faye E. Johnson (36). **Management & Administration** - Mildred L. Rucker (33). **Public Affairs** - Glenn K. Shriver, Jr. (36), Ruth K. Vass (34). **Science** - Richard A. Meyer (13). **Security & Emergency Operations** - Theda P. Bagdy (36), Sandra L. Chase (41), Charles Coker (21), Roger K. Heusser (32), David L. McColloch (27), C. Douglas Parsons (32).

Field

Albuquerque - Hortense Haynes (10), Bennett H. Young (28). **Albuquerque/NNSA** - Antonio V. Aragon (30, Walter F. Brown (21), Clifton Donaldson (27), Gloria M. O'Dowd (26), Elizabeth Ratliff (28), Bryan J. Spiegel (20), David K. Webster (28). **Chicago** - Ado E. Adami (22), Bohdan J. Bodnaruk (21), Robert I. Elder (35), Steven J. Fuller (26), Lillian S. Potts (11), Robert C. Selby (35), Michael Senitta, Jr. (32), Donald N. Yuzeitis (34).

NETL - K. H. Frohne (34), Norman L. Howton (34), Harvey M. Ness (30), Melvin W. Shupe (31), Joseph P. Slivon (33), Larry D. Strickland (25). **Nevada/NNSA** - Robert J. Agonia (37), Loretta J. Helling (25), Charles W. Saylor (27). **Ohio** - Vito G. Daino (19).

Oakland - James H. Dorn (24), Frances O. Ellingberg (28), Theron P. Erickson (40), John J. Helminski (20), Donna L. Kelly (25), Sadie L. Kiel (34), B. Edward Thornton (31). **Oakland/NNSA** - Warren Jue (30), Eloina Ovalle (21), Walter L. Von Flue (37). **Richland** - Paula K. Clark (20), Jeanne M. Nelson (25). **Strategic Petroleum Reserve** - Henry T. Gaffney (32). **Western Area Power** - Lyle P. Brown (30), Henry J. Kientz (30), Alice L. Thomas (21).

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Headquarters

Chief Financial Officer - Timothy E. Nulty (11). **Envir. Management** - Ronald W. Knisley (43), Richard L. Mizell (32). **Envir., Safety & Health** - Warren B. Clayman (33), Joseph E. Fitzgerald, Jr. (27), Robert R. Riggs (28). **FERC** - William H.S. Diehl (32). **General Counsel** - Robert A. Emmett (10). **International Affairs** - David J. Jhirad (12). **Management & Administration** - Robert J. Stiefel (31), Isabelle Y. Watkins (12). **NNSA** - Donald C. Beckwith (10), Foster J. Blair (34), David B. Pye (37). **Nuclear Energy** - Dennis L. Harrison (33). **Science** - Thomas A. Kitchens, Jr. (21).

Field

Idaho - Michael J. Bonkoski (31), Gary E. Grothaus (32). **NETL** - Anthony E. Mayne (19). **Savannah River** - John E. Anderson (33), Stanley F. Massingill (32). **Southwestern Power** - Darrell D. Jones (17). **Western Area Power** - James P. Harrington (30), Norman J. Miller (40), Melvin W. Topliss (28), Daniel Weidinger (37).

February 2001

Headquarters

NNSA - Kenneth C. Jones (31).

Field

Idaho - Sherry E. Gimpel (17), Ralph R. Throckmorton (29). **Nevada** - Diane J. Lobaugh (20). **Ohio** - Ollie M. Darby (32). **Western Area Power** - Lance Blair (20), Leona P. Ward (37). ❖

NEW ON THE *Internet*

Human subjects research

The fiscal year 2000 update of the Department of Energy's (DOE) Human Subjects Research Database is available on the Internet at **http://www.eml.doe.gov/hsrd/**. The comprehensive database contains information on all research projects that involve human subjects and that were either funded by DOE, conducted at DOE facilities, or performed by DOE personnel during FY 2000. Profiles of 300 research projects at 43 research facilities and a variety of activities—ranging from actual experiments using human volunteers to information gathering using simple questionnaires or existing information like medical records—are included in the database. The annual reporting of human subjects research is required by DOE Order O 443.1, "Protection of Human Subjects." ❖

New center to focus on distributed power

A newly established research center at the Department of Energy's National Renewable Energy Laboratory (NREL) will advance the concept known as "distributed power"—a network of dispersed, smaller-scale generation facilities. The Distributed Energy Resources Center will conduct research and provide information needed to efficiently develop additional power supplies from relatively small, decentralized generating units, ideally operated at or near the commercial and residential sites they serve.

This involves both interconnectivity systems that enable electricity produced by a variety of sources to flow onto the grid and specialized technologies for producing the new power itself. Electrical generation technologies well suited for the emerging distributed power market include small natural gas turbines, as well as those that tap into renewable energy sources.

The center, with a budget of approximately $10 million for fiscal year 2001, is organized around three units: Resource and Environmental Evaluation, Distributed Power Systems Integration, and Hydrogen and Natural Gas Systems. To support the integration mission, NREL has planned a new facility to test methods and equipment for interconnecting distributed power systems.

February/March 2001

AROUND DOE

CH2M HILL Hanford receives contract extension

The Department of Energy is extending for five years the CH2M HILL Hanford Group (CHG) contract at its Hanford Site in southeastern Washington. The $2.2 billion contract modification was signed with new, innovative provisions.

CHG will be responsible for maintaining safe storage of Hanford's 53 million gallons of high-level radioactive waste; designing and constructing equipment for future retrieval and delivery of the waste to a new waste treatment plant; providing future storage or disposal of tank waste after treatment; and preparing for deactivation and decommissioning of facilities.

A unique contract feature is an incentive provision challenging CHG to accomplish significant work activities under stable funding assumptions and significantly accelerated work schedules. Cost savings and work efficiencies by CHG primarily will fund the incentives.

Los Alamos tracking system adapted for WIPP

A smart computer system developed at the Department of Energy's (DOE) Los Alamos National Laboratory (LANL) can now provide an almost instant alarm signal when nuclear waste transport drivers waver off course. For waste-carrying trucks bound for the Department's Waste Isolation Pilot Plant (WIPP) near Carlsbad, N.M., this is a timely addition to on-board shipment-tracking systems.

The Guardian system, developed by the LANL Advanced Surveillance Technology team, already had been designed to "reason," learning to track anomalies from an established transport route or a set pattern of behavior for personnel and material in nuclear material facilities. "We realized we could deploy a Guardian-based system to provide route assurance for WIPP quickly and effectively," said project member Sharon Seitz.

The existing WIPP tracking system monitored a truck's progress toward the plant, but did not provide alarms for course deviations or stopped shipments. Guardian links with the TRANSCOM satellite tracking system. As soon as a stop, communication failure or route deviation is recognized, Guardian sounds alarms and posts messages on the computer screens of WIPP's Central Monitoring Room operators. ❖

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Official Business